

[002] This application is a national stage completion of PCT/EP2003/007215 filed July 5, 2003 which claims priority from German Application Serial No. 102 31 348.2 filed July 11, 2002. ◆◆◆

[003] FIELD OF THE INVENTION ◆◆

[004] According to the preamble of claim 1, the invention relates to a multi-speed transmission in planetary design, especially an automatic transmission of a motor vehicle. ◆◆

[005] BACKGROUND OF THE INVENTION ◆◆

[013] This problem is inventively solved by the features of claim 1. Other advantages and advantageous developments result from the sub-claims. ◆◆

[014] SUMMARY OF THE INVENTION ◆◆

[024] BRIEF DESCRIPTION OF THE INDRAWINGS ◆◆

[025] The invention is explained in detail as will now be described, by way of example, with reference to the accompanying drawings[[],] in which [[show]]: ◆◆

[029] DETAILED DESCRIPTION OF THE INVENTION ◆◆

[030] Figs. 1 and 2 show the inventive multi-speed transmission with one input shaft 1 (An) and one output shaft 2 (Ab) located in one housing G. Three one-spider planetary gear sets P1, P2, P3 are provided. The first planetary gear set P1 and the third planetary gear set P3 are designed as minus planetary gear sets; the [[first]] second planetary gear set [[P1]] P2 is designed as plus planetary gear set according to the invention. ◆◆

1-21. (CANCELED)

22. (NEW) A multi-speed transmission in planetary design, particularly an automatic transmission for a motor vehicle, comprising one input shaft (1) and one output shaft (2) located in one housing (G), first, second and third one-spider planetary gear sets (P1, P2, P3), first, second, third, fourth, fifth, sixth and seventh rotatable shafts (1, 2, 3, 4, 5, 6, 7), first, second, third, fourth, fifth and sixth shifting elements (03, 04, 14, 26, 36, 57) including brakes and clutches the selective engagement of which generates different reduction ratios between the input shaft (1) and the output shaft (2) so that seven forward gears and one reverse gear can be implemented, an input drive results by the first shaft (1) permanently connected with a sun gear of the first planetary gear set (P1), an output drive results via the output shaft (2) permanently connected with a sun gear of the third planetary gear set (P3), the set (P1) and a ring gear of the second planetary gear set (P2), the fifth shaft (5) is permanently connected with an element of the second planetary gear set (P2) and a ring gear of the third planetary gear set (P3), the sixth shaft (6) is permanently connected with one other element of the second planetary gear set (P2), the seventh shaft (7) is permanently connected with a spider of the first planetary gear set (P1), the third shaft (3) is attachable to the housing (G) by a first brake (03), the fourth shaft (4) is attachable to the housing (G) by a second brake (04), a first clutch (14) detachably interconnects the input shaft (1) and the output shaft (4), a second clutch (26) detachably interconnects the output shaft (2) an the sixth shaft (6), a third clutch (36) detachably interconnects the third shaft (3) and the sixth shaft (6) and a fourth clutch (57) detachably interconnects the fifth shaft (5) and the seventh shaft (7).

23. (NEW) The multi-speed transmission according to claim 22, wherein the fifth shaft (5) is permanently connected with a sun gear of the second planetary gear set (P2) and the ring gear of the third planetary gear set (P3) and the sixth shaft (6) is permanently connected with a spider of the second planetary gear set (P2).

24. (NEW) The multi-speed transmission according to claim 22, wherein the fifth shaft (5) is permanently connected with a spider of the second planetary gear set (P2) and the ring gear of the third planetary gear set (P3), and the sixth shaft (6) is permanently connected with a sun gear of the second planetary gear set (P2).

25. (NEW) The multi-speed transmission according to claim 22, wherein the first planetary gear set (P1) and the third planetary gear set (P3) are designed as minus planetary gear sets and the second planetary gear set (P2) is designed as plus planetary gear set.

26. (NEW) The multi-speed transmission according to claim 22, wherein additional free wheels can be used on each adequate place.

27. (NEW) The multi-speed transmission according to claim 26, wherein the free wheels are provided between the first, second, third, fourth, fifth, sixth and seventh shafts (1, 2, 3, 4, 5, 6, 7) and the housing (G).

28. (NEW) The multi-speed transmission according to claim 22, wherein the input drive and output drive are provided on a same side of the housing.

29. (NEW) The multi-speed transmission according to claim 22, wherein one or more of an axle and a transfer differential is situated on an input side or an output side.

30. (NEW) The multi-speed transmission according to claim 22, wherein the input shaft (1) can be separated from a prime mover by a coupling element.

31. (NEW) The multi-speed transmission according to claim 30, wherein the coupling element is one of a hydrodynamic converter, a hydraulic clutch, a dry starting clutch, a wet starting clutch, a magnetic powder clutch and a centrifugal clutch.

32. (NEW) The multi-speed transmission according to claim 31, wherein an external starting element can be disposed in a power flow direction behind the transmission, the input shaft (1) being fixedly connected with a crank shaft of an engine.

33. (NEW) The multi-speed transmission according to claim 22, wherein the start off results by means of one of the shifting elements of the transmission, the input shaft (1) being permanently connected with a crankshaft of an engine.

34. (NEW) The multi-speed transmission according to claim 33, wherein the shifting element is one of the fourth clutch (57) or the second brake (04).

35. (NEW) The multi-speed transmission according to claim 22, wherein one torsional vibration damper can be placed between an engine and the transmission.

36. (NEW) The multi-speed transmission according to claim 22, wherein one wear-free brake can be situated upon each shaft.

37. (NEW) The multi-speed transmission according to claim 22, wherein one power takeoff can be placed upon each shaft for driving additional units.

38. (NEW) The multi-speed transmission according to claim 37, wherein the power takeoff can be situated on the input shaft (1) or the output shaft (2).

39. (NEW) The multi-speed transmission according to claim 22, wherein the shifting elements are designed as one of power shiftable clutches or brakes.

40. (NEW) The multi-speed transmission according to claim 39, wherein the shifting elements are one or more of multi-disc clutches, band brakes and tapered clutches.

41. (NEW) The multi-speed transmission according to claim 22, wherein the shifting elements are one or more of force-locking brakes and clutches.

42. (NEW) The multi-speed transmission according to claim 22, wherein on each shaft one electric machine can be mounted as one or more of a generator and a added prime mover.